"Western Treasure -- Deep, Wet Snow"

FEDERAL-STATE COOPERATIVE SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

MONTANA

APRIL 1, 1948

by

Montana Agricultural Experiment Station
and
Division of Irrigation, Soil Conservation Service
United States Department of Agriculture

in cooperation with

U. S. Forest Service
U. S. Geological Survey
U. S. National Park Service
State Engineer of Montana
U. S. Bureau of Reclamation

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SNOW SURVEYS AND IRRIGATION WATER FORECASTS
FOR
MONTANA

Report Prepared

By

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Division of Irrigation
Soil Conservation Service
State Engineer of Montana
and
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Bozeman, Montana

INDEX TO MONTANA SNOW COURSES

Name	Montana Number	Elev.	Location Sec. Lat.	 Twp.	 Range Long.	Record Began	Measuring Dates[a]	Measured By:[b]
COLUMBIA DRAINAGE								
KOOTENAI RIVER								
Baree Mountain	1	6000	1	25N	31W	1937	4,5	1
Bluebird Basin	2	6800	24	37N	26W	1937	4,5	1
Red Mountain	10	6000	4	36N	29W	1937	2,3,4,5	1
UPPER CLARK FORK								
Chessman Reservoir	1	6200	2	8N	5W	1936	1,2,3,4,5	2
East Fork Ranger Station	2	6400	16	2N	17W	1937	2,3,4,5	1
Intergaard	3	6450	6	5N	13W	1939	2,3,4	3
North Fork Jocko	4	6330	3	17N	17W	1941	3,4,	4
Pipestone Pass	5	7200	11	1N	7W	1938	2,3,4,5	1
Rainy Lake	6	4300	11	18N	16W	1947	3,4,5	1
Skalkaho Summit	7	7258	30	6N	17W	1937	4,5	1
Slide Rock Mountain	8	7100	26	10N	16W	1937	4,5	1
Southern Cross	9	6500	9	5N	13W	1939	2,3,4	3
Stemple Pass	10	6900	16	13N	7W	1934	3,4,5	2
Storm Lake No. 2	11	7780	19	4N	13W	1939	4,5	1
Stuart Mill	12	6500	19	5N	13W	1939	2,3,4	3
Stuart Mountain #1	13	7400	6	14N	18W	1936	2,3,4,5	1
Tenmile Creek, Lower	14	6250	13	8N	6W	1935	1,2,3,4,5	2
Tenmile Creek, Middle	15	6800	13	8N	6W	1934	1,2,3,4,5	2
Tenmile Creek, Upper	16	8000	19	8N	5W	1935	1,2,3,4,5	2
BITTERROOT RIVER								
East Fork Ranger Station	1	5400	16	2N	17W	1937	2,3,4,5	1
Gibbons Pass	2	7100	4	2S	19W	1934	2,3,4,5	1,2
Mud Creek Pasture	3	4500	24	11N	24W	1937	2,3,4,5	1
Nezperce Camp	4	5580	19&20	1S	23W	1937	2,3,4,5	1
Skalkaho Summit	7	7258	30	6N	17W	1937	4,5	1
Stuart Mountain #1	8	7400	6	14N	18W	1936	3,4,5	1
FLATHEAD RIVER								
Big Creek	1	6750	6&7	22N	18W	1941	4,5	4
Cattle Queen	2	4700	7	35N	17W	1939	3,4	5
Desert Mountain	3	5600	24	31N	19W	1937	4,5	1
Elk Mountain	4	6750	1	20N	19W	1941	3,4	4
Goat Mountain	5	7000	47°39'		112°54'	1934	3,4	2
Hell Roaring Creek Divide	6	5770	35	32N	22W	1942	4,5	1
Horse Ridge[c]	7	5200	8	25N	15W	1937	4,5	1
Kishenehn	8	4300	7	37N	21W	1946	4,5	5
Logan Creek	9	4300	34	30N	24W	1937	4,5	1
Marias Pass	10	5250	48°19'		113°21'	1934	1,2,3,4,5	2
North Fork Jocko	11	6330	3	17N	17W	1941	3,4,5	4
Rainy Lake	12	4300	11	18N	16W	1947	3,4,5	1
PEND OREILLE RIVER								
Baree Mountain	1	6000	1	25N	31W	1937	4,5	1
Freezeout Summit	6	7000	21	15N	27W	1937	3,4,5	1
Hoodoo Creek	7	6200	9&16	14N	27W	1937	3,4,5	1
MISSOURI RIVER DRAINAGE								
BEAVERHEAD RIVER								
Flashlight	10	6950	22	8S	7W	1945	3,4	1
Elkhorn	11	8450	15	4S	12W	1934	3,4,5	2
Miner Lake	12	6720	10	6S	16W	1945	3,4	1
Gibbons Pass	13	7100	4	2S	19W	1934	2,3,4,5	1,2
MADISON RIVER								
Hebgen	7	6550	22	11S	3E	1934	1,2,3,4,5	2
st Yellowstone	6	6700	34&35	13S	5E	1934	1,2,3,4,5	2
ALLATIN RIVER								
evil's Slide	1	8100	14	5S	6E	1935	3,4,5	2,6
ood Meadow Extension	2	6600	22	4S	6E	1934	3,4,5	2,6
ystic Lake #1 and #2	3	6600	30	3S	7E	1935	1,2,3,4	6,7
ew World Trail	4	6700	24	3S	6E	1939	3,4	6,7
Ross Peak	5	7000	10	1N	6E	1939	3,4	1,6
21 Mile	6	7150	1	11S	5E	1934	2,3,4,5	2

Name	Montana Number	Elev.	Location Sec. Lat.	 Twp.	 Range Long.	Record Began	Measuring Dates[a]	Measured By:[b]
MISSOURI RIVER DRAINAGE (Cont.)								
YELLOWSTONE RIVER								
Crevice #1	5	8400	29	9S	9E	1935	3,4	1
Crevice #2	6	8150	26	9S	9E	1935	3,4	1
Porcupine	7	6500	10	4N	10E	1938	3,4	1
Hells Canyon	8	6000	23	5S	12E	1940	3,4	6
Independence	9	8000	22	7S	12E	1940	3,4	6
Cooke City	10	7400	25	9S	14E	1937	1,2,3,4,5	5
Camp Senia	11	7890	2	8S	18E	1938	3,4	1
MUSSELSHELL RIVER								
Orville Harris	26	6500	31	10N	9E	1938	3,4	6
MISSOURI RIVER MAIN STEM								
Pipestone Pass	14	7200	11	1N	7W	1938	2,3,4,5	1
Tenmile Creek, Lower	15	6250	13	8N	6W	1935	1,2,3,4,5	2
Tenmile Creek, Middle	16	6800	13	8N	6W	1934	1,2,3,4,5	2
Tenmile Creek, Upper	17	8000	19	8N	6W	1935	1,2,3,4,5	2
Chessman Reservoir	18	6200	2	8N	5W	1936	1,2,3,4,5	2
Stemple Pass	19	6900	16	13N	7W	1934	3,4,5	2
Half Moon	23	6000	22	12N	16E	1940	3,4	1,6
Crystal Lake	24	6100	24	12N	17E	1941	3,4	1,6
Kings Hill	25	7950	35	13N	7E	1937	3,4,5	2
Grasshopper	27	7000	19	9N	8E	1938	3,4	1,6
SUN RIVER								
Goat Mountain	20	7000	47°31'		112°55'	1934	4,5	2
MARIAS RIVER								
Marias Pass	21	5250	48°19'		113°21'	1934	1,2,3,4,5	2
MILK RIVER								
Rocky Boy	22	5200	15	28N	16E	1942	3,4	6
SASKATCHEWAN RIVER DRAINAGE								
ST. MARY RIVER								
Piegan Pass #6	19	6500	48°45'		113°42'	1922	5	2,8
Piegan Pass #4	20	5000	48°46'		113°40'	1922	5	2,8
Mount Allen	21	7000	48°44'		113°40'	1922	5	2,8
Ptarmigan #8	22	5500	48°50'		113°42'	1922	5	2,8
Iceberg Lake	23	6000	48°50'		113°42'	1922	5	2,8

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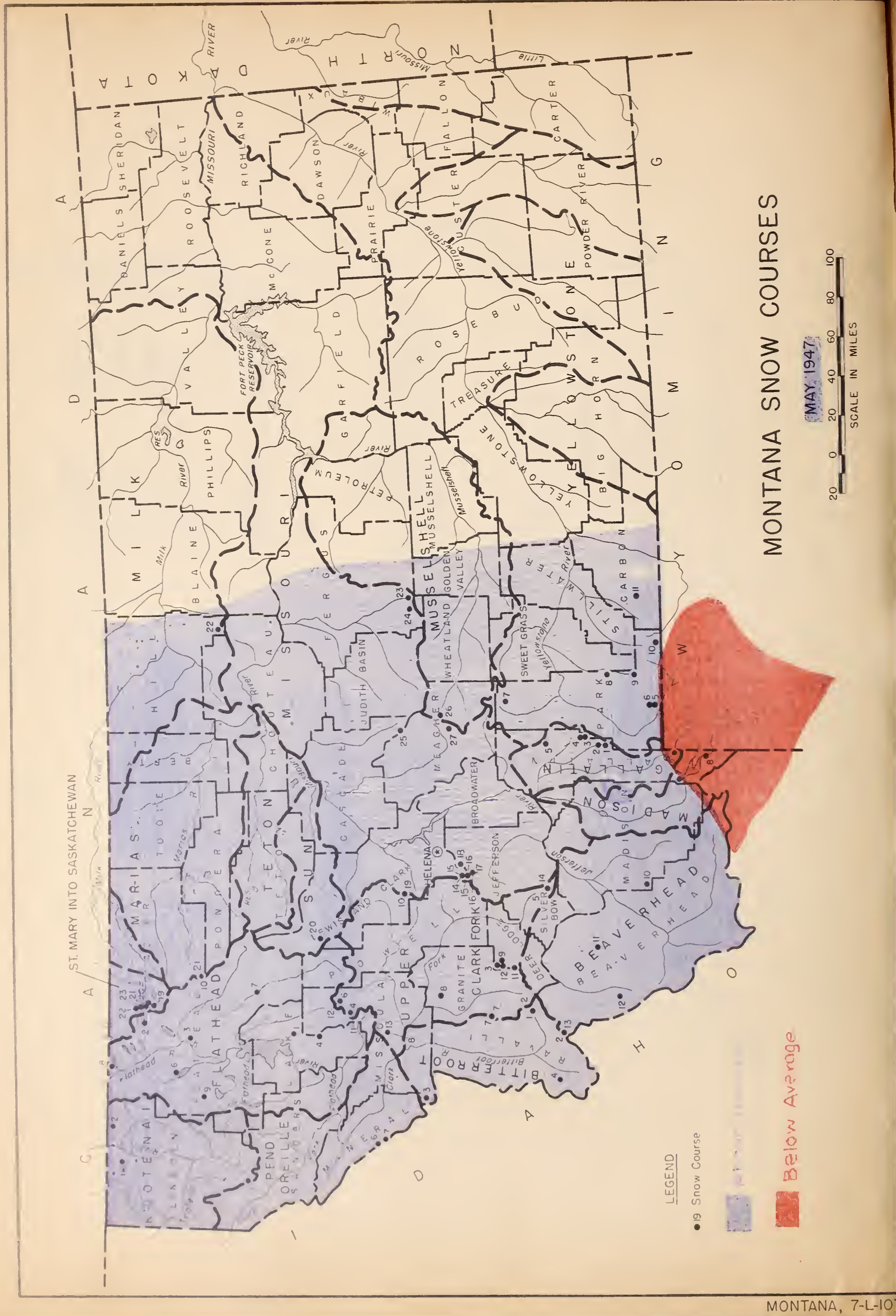
a. Numerals 1,2,3,4, and 5 refer to January 1, February 1, March 1, April 1, and May 1.

b. Numerals refer to Agency that secures the snow survey, as follows:

1. U. S. Forest Service
2. U. S. Geological Survey and U. S. Engineer Corps
3. Montana Power Company
4. U. S. Indian Service
5. National Park Service
6. Montana Experiment Station
7. City of Bozeman
8. Dominion Water and Power Bureau

c. Discontinued 1943-1947


MONTANA SNOW COURSES
MAY, 1947
SCALE IN MILES
20 0 20 40 60 80 100
ST. MARY INTO SASKATCHEWAN
LEGEND
•19 Snow Course
🟥 Below Average

SUMMARY OF FORECAST

Above normal runoff from the watersheds of Western Montana may be expected unless the usual May-June precipitation should fail. The snow pack as measured April 1st is the heaviest on record as of this date on many snow courses.

Soil moisture conditions are reported as average to slightly better than average.

Reservoir storage West of the Continental Divide is 15% greater than last year, but is about 5% less than last year East of the Divide. Water now stored in the snow banks is more than ample to fill existing reservoir storage capacity.

Precipitation dropped below normal during March, particularly in the Eastern Division.

WATER SUPPLY OUTLOOK IN MONTANA, APRIL 1, 1948

Stream Flow - The flow of the Yellowstone River at Corwin Springs is reported by the U. S. Geological Survey to be 13% above the March median. The Judith River near Utica is also about the same per cent above normal. Forecasts are given in this report for several streams.

Soil Moisture Conditions - Observations made at North Montana Branch Station at Havre on March 30th showed moisture penetrations of 16 inches on stubble and 20 inches on fallow land. This represents about an average condition for stubble land but is less than usual for fallow land.

At the Central Montana Branch Station, the total precipitation since the first of the year is 1.78 inches, which is approximately equal to the long time average. Anticipating normal precipitation during April, the moisture conditions are considered to be favorable.

At the Huntley Field Station the moisture penetration on grain and corn land is between 6 and 8 inches. On summer fallowed land the penetration reached an average of 24 inches with a maximum of 27 inches.

Soil moisture data were furnished by:
M. A. Bell, Superintendent of Northern Montana Branch Station
Ralph Williams, Superintendent of Central Montana Branch Station
A. E. Seamans, Agronomist, Huntley Field Station

Reservoir Storage - In the Columbia Basin in Montana 14 reservoirs having a combined capacity of 197,445 acre feet were 58% full as of April 1st, as compared with 43% last year on the same date.

Sixteen reservoirs in the Missouri Basin having a total capacity of 1,140,640 acre feet were 67% full as of April 1st, compared to 72% on April 1st last year. The above normal snow pack on the watersheds assures the complete filling of these reservoirs during the May-June runoff.

NARRATIVE FORECAST

Missouri Basin

Gallatin River - The snow surveys made as of April 1st indicate a heavier than usual snow pack on the Gallatin River watershed. Compared to the 10 year period of record, the water content is from 46% to 71% above average. An accumulation of 4.4 inches in water content was noted between the March 1st and April 1st measurements at the Devil's Slide snow course. The valley precipitation during that period was .89 inches, compared to the long time average of 1.29 inches.

Madison River - At four locations on the Madison River watershed the water content as of April 1st was found to be slightly below the average for the period of record. There was an accumulation of water at all four locations, when compared with the March 1st measurements. The water content is approximately 90% of the average for the 12 year period of record.

Jefferson River - The water content of the snow cover on the Jefferson watershed is from 10% to 44% above the average for the period of record. A substantial accumulation was shown at all five locations, when compared with the March 1st reading.

Main Stem Above Great Falls - The snow surveys made on the watersheds of the minor tributaries to the Missouri River between Three Forks and Great Falls were all above average. At Chesman Reservoir the water content was 9.2 inches as compared with 4.4 inches for the average of the 13 year period of record. At Kings Hill the water content was 13.1 inches, as compared with 12.3 inches for the 10 year period of record.

In general, the April 1st survey indicates very satisfactory moisture conditions on the smaller watersheds tributary to the Missouri River above Great Falls.

Sun River - The water content of the snow on the Goat Mountain snow course was 11.4 inches which was 33% above average.

Marias River - The water content at locations on the Marias River watershed is approximately 20% above average. There was a considerable accumulation of moisture at Marias Pass during March, but the amount observed on the Rocky Boy snow course was only slightly above that measured on March 1st.

Mussellshell River - The water content of the snow cover on the Mussellshell watershed was found to be approximately 30% above average on April 1st, as observed at snow courses at five different locations.

Yellowstone Basin

Main Stem Above Livingston - Snow surveys made on five snow courses indicate a substantial gain of moisture since March 1st. As compared to the average over the past 10 to 12 years, the water content is from 10% to 50% greater. At Yellowstone Lake in the Park the water content was 11.5 inches, as compared to 10.3 inches for the past 13 years.

Shields River - The water content of the snow cover at Porcupine Ranger Station near Wilsall was approximately 50% above the average for the past 11 years. There was a substantial increase during the month of March.

Boulder River - No reports are available.

Clarks Fork River - Snow surveys were made at two locations on the Clarks Fork watershed and indicate a water content from 30% to 40% above the average for the past 12 years. At Cooke City the water content was 10.1 inches.

Columbia Basin

Bitterroot Watershed - The water content on two snow courses is about 27% above the average for the past 10 years. The measurements showed a considerable increase over the March 1st readings.

Blackfoot River - The water content of the snow is approximately 25% above average.

Clarks Fork Above Milltown - The water content at 8 representative snow courses ranges from 20% to 80% above the average.

Clarks Fork Below Milltown - The water content readings on 5 snow courses is approximately 25% above average.

Flathead River - The water content of the snow cover on the Flathead watershed is approximately 25% above the average for the period of record.

Kootanai River - The water content is well above normal on the Kootanai watershed.

PRELIMINARY FORECAST OF RUNOFF AT A NUMBER OF REPRESENTATIVE GAUGING STATIONS IN THE MISSOURI AND YELLOWSTONE BASINS

Name of Stream	May - June	July-Aug.-Sept.
	Forecast (Sec. Ft. Days)	
Gallatin River at Gateway	*189,800 ± 15%	44,000 ± 25%
Hyalite Creek	13,700 ± 15%	9,900 ± 15%
Madison River at West Yellowstone	49,600 ± 15%	32,000 ± 15%
North Fork of Musselshell River at Delpine	2,000 ± 20%	1,100 ± 15%
Yellowstone River at Corwin Springs	514,000 ± 10%	381,600 ± 20%
Shields River at Wilsall	17,000 ± 25%	3,600 ± 20%
Clarks Fork of Yellowstone at Chance	300,720 ± 15%	May-June-July
West Fork of Rock Creek Below Basin Creek	18,000 ± 25%	19,600 ± 25%
Red Lodge Creek Above Cooney Reservoir	**10,669 ± 20%	Maximum Month
Missouri River at Fort Benton	1,235,478 ± 15%	

* Probably high

** Probably Low

MONTANA SNOW SURVEYS APRIL 1, 1948

MISSOURI BASIN

DRAINAGE BASIN and SNOW COURSE	LOCATION						SNOW COVER MEASUREMENTS					
	No. or State		Sec. —— Lat.	Twp. (or)	Range —— Long.	Elev.	Date of Survey	Snow Depth (Inches) 1948	Water Content (Inches) 1948	Water Content (Inches) Same Approx. Date 1947	Water Content (Inches) Same Approx. Date 1946	Past Record Years of Record (incl. 1948)	Past Record Av. Water* Content (Inches)
Gallatin River													
Devil's Slide	Mont.	1	14	5S	6E	8100	4-1	83.6	27.4	22.6	24.2	10	18.8
Hood Meadow Ext.	"	2	22	4S	6E	6600	4-1	46.2	13.3	10.8	8.4	10	8.2
New World	"	4	24	3S	6E	6600	4-6	47.7	16.1	9.2	9.8	10	9.4
Ross Peak	"	5	10	1N	6E	7000	4-1	48.2	14.8	7.4	9.6	10	7.3
21 Mile	"	6	1	11S	5E	7150	3-30	55.3	14.4	17.8	20.0	12	15.5
Madison River													
Hebgen Lake	"	7	22	11S	3E	6550	3-30	45.6	11.7	11.0	15.3	12	12.4
Norris Basin	"	9		44.3N	110.7W	7500	3-27	37.4	8.6	8.8	8.7	13	9.5
21 Mile	"	6	1	11S	5E	7150	3-30	55.3	14.4	17.8	20.0	12	15.5
W. Yellowstone	"	8	34	13S	5E	6700	3-30	37.0	9.0	10.4	12.6	12	10.6
Jefferson River													
Elkhorn	"	11	15	4S	12W	8450	3-30	38.2	9.4	11.1	9.9	10	8.3
Flashlight	"	10	22	8S	7W	6950	4-2	23.7	5.9	4.2	6.5	4	5.4
* Gibbons Pass	"	13	4	2S	19W	7100	4-1	70.6	23.0	26.8	25.4	10	20.8
Miner Lake	"	12	10	6S	16W	6720	3-26	50.4	13.0	10.2	7.6	4	9.0
Pipestone	"	14	11	1N	7W	7200	3-31	31.0	7.4	7.0	5.7	10	5.4

*Average water content for period of record.

MONTANA SNOW SURVEYS APRIL 1 , 1948

MISSOURI BASIN

DRAINAGE BASIN and SNOW COURSE	LOCATION							SNOW COVER MEASUREMENTS					
									Water Content (Inches)			Past Record	
	No. or State		Sec. — Lat.	Twp. (or)	Range — Long.	Elev.	Date of Survey	Snow Depth (Inches) 1948	1948	Same Approx. Date 1947	1946	Years of Record (Incl.'48)	Av. Water* Content (inches)
Main Stem													
Above Great Falls													
Chesman	Mont.	18	2	8N	6W	6200	4-2	31.7	9.2	4.7	2.4	13	4.4
Kings Hill	"	25	35	13N	7E	7950	3-29	47.0	13.1	15.4	17.4	10	12.3
Rimini Lower	"	15	13	8N	6W	6250	3-31	38.6	9.1	7.8	3.8	13	5.9
Rimini Middle	"	16	13	8N	6W	6800	3-31	52.6	14.1	14.2	7.9	13	9.8
Rimini Upper	"	17	19	8N	5W	8000	3-31	57.5	18.1	17.5	10.8	13	12.7
Stemple Pass	"	19	16	13N	7W	6900	4-1	44.2	10.3	13.0	8.6	10	8.7
Sun River													
Goat Mountain	"	20	45.5N		112.9W	7000	4-2	44.3	11.7	17.8	9.9	10	8.8
Marias River													
Marias Pass	"	21	48.3N		113.4W	5250	4-1	68.6	18.9	23.3	17.7	13	15.8
Rocky Boy	"	22	15	28N	16E	5200	4-1	24.3	6.7	5.6	4.5	7	5.6
Mussellshell River													
Crystal Lake	"	24	24	12N	17E	6100	4-5	50.5	16.3	11.9	10.8	8	12.0
Grasshopper	"	27	19	9N	8E	7000	4-30	29.2	6.8	8.5	3.6	11	4.9
Half Moon	"	23	22	12N	18E	6000	4-5	32.5	9.5	8.3	7.2	9	7.7
Kings Hill	"	25	35	13N	7E	7950	3-29	47.0	13.1	15.4	17.4	10	12.3
Orville Harris	"	26	31	10N	9E	6500	4-29	23.4	5.8	7.9	3.1	11	4.7

* Average Water Content for Period of Record

NEW COURSES MEASURED THIS YEAR

MISSOURI BASIN

	LOCATION					SNOW MEASUREMENTS					
WATERSHED and SNOW COURSE	State	Sec.	Twp. or Lat.	Range or Long.	Elev.	Date of Survey	This Month (March) S.D.	W.C.	Last Month (February) S.D.	W.C.	Gain
Beaverhead:											
Bloody Dick Cr.	Mont.	12	8S	16W	7760	3/19	38.2	10.2	29.5	7.0	3.2
Gold Stone	"	11	8S	16W	8250	3/20	47.6	12.9	37.6	9.7	3.2
Lemhi	"	9	10S	15W	7480	3/18	40.8	11.1	36.4	9.3	1.8
Selway Junction	"	27	8S	15W	6900	3/20	28.4	6.8	19.4	4.1	2.7
Terrell	"	14	9S	15W	6650	3/20	15.5	3.5	11.9	2.4	1.1
Trail Creek	"	15	10S	15W	7080	3/18	38.4	10.5	33.1	7.8	2.7
Big Hole:											
Anderson Mdws.	"	12	3S	12W	7200	3/24	29.6	6.9	33.4	6.6	.3
Below Big Hole Pass		26	3S	18W	6900	3/25	45.5	12.4	40.2	7.9	4.5
Big Hole Pass	"	28	3S	18W	7340	3/25	53.7	14.9	45.6	11.6	3.3
East Boundry	"	22 & 27	3S	17W	6700	3/25	27.1	7.5	24.5	5.2	2.3
Jahnke Creek	"	25	7S	16W	7340	3/19	35.9	9.1	27.6	6.3	2.8
Miner Forks	"	19	6S	16W	7300	3/26	39.5	10.3	30.0	6.3	4.0
Wise River	"	15	2S	12W	6400	3/24	19.5	4.7	22.5	4.5	.2
Ruby-Beaverhead:											
Cottonwood Creek	"	25	10S	3W	7900	----	29.9	7.3	27.2	5.9	1.4
Tobacco Root	"	18	4S	3W	6900	3/21	40.8	10.8	35.2	8.3	2.5
Upper Cottonwood	"	30	10S	2W	8400	3/22	36.0	8.5	32.3	6.0	3.5
Vigilante	"	28	9S	3W	6125	----	9.1	2.2	6.0	1.1	1.1
Red Rock & Little Sheep Cr:											
Limekiln	"	8	12S	9W	6950	3/17	12.7	2.8	5.4	0.8	2.0
White Pine Ridge	"	18	14S	9W	8850	3/17	29.6	7.8	21.8	4.9	2.9
Teton River:											
Fright Creek	"					4/1	59.4	13.4			
Waldron	"					3/31	22.3	6.0			
West Fork	"					3/31	44.6	13.6			
Sun River:											
Benchmark	"					3/29	32.2	9.3			
5 Bull	"					3/29	30.6	8.8			

Montana SNOW SURVEYS April 1, 1948

YELLOWSTONE

DRAINAGE BASIN and SNOW COURSE	LOCATION							SNOW MEASUREMENTS					Past Record
	State	No.	Sec.	Twp. or Lat.	Range or Long.	Elev.	Date of Survey	Snow Depth (In.) 1948	Water Content (Inches) 1948	Same Approx. 1947	Date 1946	Years of Record	Av. Water Content (Inches)
Main Stem:													
Canyon	Mont.	2	44.7N		110.6W	7750	4/1	45.0	10.2	12.8	11.9	11	10.6
Crevice Mt.#1	"	5	26	9S	9E	8400	4/1	50.2	13.8	11.2	9.4	14	9.4
Crevice Mt.#2	"	6	25	9S	9E	8150	4/1	50.6	14.6	12.2	9.9	14	9.5
Lake	"	1	44.6N		110.4W	7850	4/1	44.5	11.5	12.3	12.6	13	10.3
Lupine	"	3	44.9N		110.6W	7300	4/2	39.4	10.1	9.9	12.2	6	10.1
Shields River:													
Porcupine	"	7	10	4N	10E	6500	3/31	23.0	6.1	5.5	3.8	9	4.1
Boulder River:													
Independence	"	9	22	7S	12E	8000			No Report				
Clarks Fork:													
Camp Senia	"	11	2	8S	18E	7890	3/30	38.2	9.4	9.8	8.0	11	7.3
Cooke City	"	10	25	9S	14E	7400	3/31	37.9	10.1	8.3	6.6	11	7.0

Montana SNOW SURVEYS April 1, 1948

COLUMBIA BASIN

			LOCATION					SNOW MEASUREMENTS					Past Record
WATERSHED and SNOW COURSE	State	No.	Sec.	Twp. or Lat.	Range or Long.	Elev.	Date of Survey	Snow Depth (IN.) 1948	Water Content (Inches) 1948	Same Approx. Date 1947	Same Approx. Date 1946	Years of Record	Av. Water Content (Inches)
Bitterroot:													
Gibbons Pass	Mont.	M13	4	2S	19W	7100	4/1	71.0	24.7	26.8	25.4	10	21.0
Skalkaho	"	7	30	6N	17W	7258	3/30	86.0	29.2	29.9	23.7	10	21.5
Blackfoot P:													
Stemple	"	M19	16	13N	7W	6900	4/1	44.2	10.3	13.0	8.6	15	8.7
Stuart Mt.	"	9	6	14N	18W	7400	3/29	93.0	37.5	38.2	36.0	12	28.9
Clark Fork-Above Milltown:													
Intergaard	"	6	6	5N	13W	6450	3/31	46.0	10.2	7.0	6.2	4	6.5
Skalkaho	"	7	30	6N	17W	7258	3/30	86.0	29.2	29.9	23.7	10	21.5
Slide Rock Mt.	"	8	26	10N	16W	7100	4/1	66.0	19.2	16.5	13.7	11	12.8
Southern Cross	"	5	9	5N	13W	6500	3/31	28.0	6.8	3.4	3.2	3	4.2
Stemple	"	M19	16	13N	7W	6900	4/1	44.2	10.3	13.0	8.6	10	8.7
Storm Lake	"	3	19	4N	13W	7780	3/29	64.1	19.7	17.6	14.0	10	13.7
Stuart Mill	"	4	19	5N	13W	6500	3/31	36.0	9.2	4.9	5.0	4	5.1
Pipestone Pass	"	14	11	1N	7W	7200	3/31	31.0	7.4	7.0	5.7	10	5.5
Clark Fork-Below Milltown:													
Freezout Mt.	"	12	21	15N	27W	7000	4/1	110.0	33.7	39.8	34.2	12	28.8
Hoodoo Creek	"	11	9	14N	27W	6200	4/1	132.0	42.7	57.2	53.0	12	42.4
Lookout Pass	Idaho		4	47N	6E	5250	4/1	105.0	37.5	36.8	41.8	12	30.0
Packers Mdw.	"		15	38N	15E	5700	4/4	67.0	24.3	24.0	22.4	12	19.1
East Fork	Mont.		16	2N	17W	5400	4/1	29.0	6.5	3.0	3.7	10	3.9

Montana SNOW SURVEYS April 1, 1948

COLUMBIA

DRAINAGE BASIN and SNOW COURSE	LOCATION							SNOW MEASUREMENTS					Past Record
	State	No.	Sec.	Twp. or Lat.	Range or Long.	Elev.	Date of Survey	Snow Depth (In.) 1948	Water Content (Inches) 1948	Water Content (Inches) Same Approx. Date 1947	Water Content (Inches) Same Approx. Date 1946	Years of Record	Av. Water Content (Inches)
Flathead:													
Hell Roaring Cr.	Mont.	16	7	22N	18W	6750	4/1	128.2	45.8	52.1	46.0	8	35.3
Marias Pass	"	M21		48°19N	113°21'W	5250	4/1	68.6	18.9	23.3	17.7	13	15.8
No. Fork Jocko	"	13	3	17N	17W	6330	4/2	126.6	46.2	52.0	48.5	8	37.0
Stuart Mt.	"	9	6	14N	18W	7400	3/29	93.0	37.5	38.2	36.0	12	29.0
Kootanai:													
Red Mountain	"		4	36N	29W	6000	4/1	60.0	19.2	23.1	21.1	10	16.5
Barree Mt.	"		1	25N	31W	6000	3/31	113.0	40.6	51.5	46.8	10	35.2

STORAGE IN RESERVOIRS OF MONTANA

COLUMBIA RIVER BASIN MARCH 31, 1948

DATA FURNISHED BY OPERATING ORGANIZATIONS

COMPILED BY WATER RESOURCES BRANCH, U. S. GEOLOGICAL SURVEY, HELENA, MONT.

Reservoir	Located on or diverting fro	Usable Capacity Acre-feet	Contents this month-end	Contents month ago	Contents year ago
[a] Georgetown Lake	Flint Creek	31,000	25,690	28,660	21,740
[b] W.Fk.Bitterroot Res.	W.Fk.Bitterroot R.	31,700	10,000	10,000	10,000
[a] Flathead L.(Somers)	Flathead River	*1,791,000	558,200	681,200	688,300
[d] Little Bitterroot L.	Little Bitterroot R.	18,000	13,400	13,200	5,100
[d] Hubbart Reservoir	Little Bitterroot R.	12,100	10,960	10,540	3,660
[d] Upper Dry Fork Res.	Dry Fork Creek	2,700	1,120	970	1,260
[d] Dry Fork Res.	Dry Fork Creek	4,000	2,570	2,240	3,570
[d] Twin Reservoir Canals	(Mission Valley)	600	170	170	238
[d] Pablo Res. Canals	(Mission Valley)	25,000	13,210	13,210	6,950
[d] Lower Crow Res.Crow Cr.	(Mission Valley)	10,350	8,580	8,140	8,730
[d] Kicking Horse Res.Can.	(Mission Valley)	8,350	6,830	6,240	5,580
[d] Ninepine Res. Canals	(Mission Valley)	14,870	11,800	11,800	8,480
[d] McDonald Res. Post Cr.	(Mission Valley)	8,225	7,480	6,820	6,520
[d] Mission Res.Mission Cr.	(Mission Valley)	7,250	1,560	1,400	1,600
[d] Tabor Res. Dry Cr.	(Mission Valley)	23,300	2,020	1,940	1,780
[d] Lower Jocko L.,Jocko R.	(Mission Valley)	7,60			

Data furnished by:

a Montana Power Company
b Montana State Water Conservation Board
c Bitterroot River Irrigation District
d Office of Indian Affairs

* Contents at elev. 2893, considering 2878 as base. Contents at authorized min. elev. 2883, 572,300 acre-feet.

STORAGE IN RESERVOIRS OF MONTANA

MISSOURI RIVER BASIN MARCH 31, 1948

DATA FURNISHED BY OPERATING ORGANIZATIONS

COMPILED BY WATER RESOURCES BRANCH, U. S. GEOLOGICAL SURVEY, HELENA, MONT.

Reservoir	Located on or diverting from	Usable Capacity Acre-feet	Contents this month-end	Contents month ago	Contents year ago
[a] Lake Sewall	Missouri	37,800	36,980	36,220	37,360
[a] Hauser Lake	Missouri	52,090	45,730	45,730	47,920
[a] Holter Reservoir	Missouri	73,600	43,240	42,250	65,990
[a] Hebgen Reservoir	Madison R.	345,000	257,600	283,700	220,200
[a] Madison Reservoir	Madison R.	41,000	38,010	37,140	37,740
[d] Gibson Reservoir	N. Fk. Sun R.	105,000	64,410	60,140	58,590
[d] Willow Creek	N.Fk.Sun & Willow Cr.	32,300	17,170	16,700	15,270
[d] Pishkun Reservoir	N. Fk. Sun R.	32,000	20,840	20,840	17,230
[e] Four Horns Res.	Badger Creek	20,000	7,360	7,330	10,700
[f] Birch Creek Res.	Birch Creek	30,000	20,990	19,030	26,290
[f] Lake Francis Res.	Birch & Dupuyer Cr.	112,000	102,650	102,340	103,900
[d] Fresno Reservoir	Milk River	127,200	77,420	71,800	136,700
[a] Mystic Lake	W. Rosebud Cr.	20,800	5,750	10,980	8,880
[c] Cooney Reservoir	Red Lodge Cr.	27,500	4,210	7,410	10,250
[c] Tongue River	Tongue River	73,900	16,150	9,580	18,580
Lake Helena	Missouri River	10,450	7,200	7,200	8,270

Data furnished by:

a Montana Power Company
c Montana State Water Conservation Board
d Bureau of Reclamation
e Office of Indian Affairs
f Valier Montana Land & Water Company

U.S. DEPARTMENT OF COMMERCE, WEATHER BUREAU
STATE OF MONTANA, MONTHLY PRECIPITATION FOR
OCTOBER 1, 1947 - MARCH 31, 1948

STATIONS	1947 OCTOBER		1947 NOVEMBER		1947 DECEMBER		1948 JANUARY		1948 FEBRUARY		1948 MARCH		1947 APRIL	
	Precip.	Dep.	Precip.	Dep.	Precip.	Dep.	Precip.	Dep.	Precip.	Dep.	Precip.	Dep.	Precip.	Dep.
WEST OF DIVIDE														
Butte	1.29	+0.50	1.50	+1.10	0.55	+0.11	0.68	+0.28	0.60	+0.16	0.77	+0.13		
Deer Lodge	1.20	+0.52	1.27	+0.72	0.42	-0.09	0.27	-0.32	0.13	-0.30	0.30	-0.31		
Hamilton	1.36	+0.45	1.10	+0.29	0.38	-0.33	1.90	+1.11	1.91	+1.16	0.73	+0.04		
Missoula	1.09	+0.14	2.41	+1.51	0.78	-0.17	1.32	+0.47	0.97	+0.15	0.41	-0.41		
CENTRAL DIVISION														
Babb	1.60	+0.42	0.82	-0.17	0.50	-0.44	0.71	-0.23	0.73	-0.09	0.84	-0.27		
Dillon	0.33	——	0.44	——	0.35	——	0.28	-0.55	0.38	-0.34	0.90	-0.26		
Fort Benton	0.38	-0.34	1.05	+0.46	0.56	+0.05	0.98	+0.32	0.56	+0.07	1.15	+0.53		
Great Falls	0.54	-0.32	1.11	+0.43	0.44	-0.21	1.23	+0.62	0.36	-0.21	1.42	+0.56		
Havre	0.48	-0.19	0.38	-0.23	0.27	-0.34	0.38	-0.35	0.47	-0.05	0.47	-0.04		
Helena, WBO	0.55	-0.06	1.40	+0.95	0.27	-0.20	0.51	-0.05	0.22	-0.17	0.49	-0.30		
Livingston	0.84	——	0.87	——	0.64	——	0.66	+0.12	0.55	+0.01	0.74	-0.12		
Lewistown Arpt.	0.23	-0.13	0.88	+0.67	0.62	+0.42	1.03	+0.30	0.33	-0.44	0.86	-0.17		
Mystic Lake	1.47	-0.37	1.90	+0.32	0.77	-0.27	3.53	+2.39	1.95	+0.87	1.82	-0.23		
Bozeman, Ag. Col.	0.68	——	2.15	——	1.00	——	1.11	+0.24	0.65	-0.16	0.89	-0.38		
EASTERN DIVISION														
Billings #2	0.52	——	0.63	——	0.91	+0.41	0.37	-0.26	0.23	0.19	0.54	-0.30		
Circle	0.33	-0.52	0.23	-0.34	0.24	-0.51	0.14	-0.53	0.50	-0.11	0.16	-0.84		
Frazer	0.43	-0.45	0.60	+0.07	0.46	+0.07	0.29	-0.12	0.75	+0.41	0.51	-0.19		
Malta	0.66	-0.07	0.04	-0.37	0.38	-0.08	0.16	-0.31	0.62	+0.25	0.30	-0.24		
Mildred	0.14	-0.59	0.38	+0.01	0.21	-0.11	0.53	+0.19	0.83	+0.57	0.36	-0.06		
Medicine Lake	0.28	-0.47	0.94	+0.61	0.21	-0.07	0.51	+0.20	0.72	+0.40	0.17	-0.24		
Miles City	0.39	-0.53	0.31	-0.26	0.28	-0.35	0.42	-0.24	0.74	+0.23	*	*		
Fort Peck	0.33	-0.42	0.06	-0.41	0.29	+0.01	0.12	-0.26	0.42	+0.15	0.38	-0.12		

Garland 0.34 -0.33